



DESERT TORTOISE COUNCIL

3807 Sierra Highway #6-4514

Acton, CA 93510

www.deserttortoise.org

eac@deserttortoise.org

Via email

October 16, 2026

Ryan Harding
ADOT Community Relations
1655 W. Jackson St., MD126F
Phoenix, AZ 85007
freightplan@azdot.gov

RE: Draft Arizona State Freight Plan October 2026

Dear Mr. Harding,

The Desert Tortoise Council (Council) is a non-profit organization comprising hundreds of professionals and laypersons who share a common concern for wild desert tortoises and a commitment to advancing the public's understanding of desert tortoise species. Established in 1975 to promote conservation of tortoises in the deserts of the southwestern United States and northern Mexico, the Council routinely provides information and other forms of assistance to individuals, organizations, and regulatory agencies on matters potentially affecting desert tortoises within their geographic ranges.

Both our physical and email addresses are provided above in our letterhead for your use when providing future correspondence to us. When given a choice, we prefer to receive emails for future correspondence, as mail delivered via the U.S. Postal Service may take several days to be delivered. Email is an "environmentally friendlier way" of receiving correspondence and documents rather than "snail mail."

We appreciate this opportunity to provide comments on the above-referenced project. Given the location of the proposed project in habitats potentially occupied by the Sonoran desert Tortoise (*Gopherus morafkai*) (synonymous with Morafka's desert tortoise) and Mojave desert tortoise (*Gopherus agassizii*) (synonymous with Agassiz's desert tortoise), our comments include recommendations intended to enhance protection of these species and their habitats during activities that may be authorized by the Arizona Department of Transportation (ADOT), which we recommend be implemented in any authorizing documents [e.g., issuance of right-of-way (ROW) project approval, National Environmental Policy Act (NEPA) decision document, etc.] as

appropriate. Please accept, carefully review, and include in the relevant project file the Council's following comments for the proposed action.

The Mojave desert tortoise is among the top 50 species on the list of the world's most endangered tortoises and freshwater turtles. The International Union for Conservation of Nature's (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers the Mojave desert tortoise to be Critically Endangered (Berry et al. 2021), "... based on population reduction (decreasing density), habitat loss of over 80% over three generations (90 years), including past reductions and predicted future declines, as well as the effects of disease (upper respiratory tract disease/mycoplasmosis). *Gopherus agassizii* (sensu stricto) comprises tortoises in the most well-studied 30% of the larger range; this portion of the original range has seen the most human impacts and is where the largest past population losses have been documented. A recent rigorous rangewide population reassessment of *G. agassizii* (sensu stricto) has demonstrated continued adult population and density declines of about 90% over three generations (two in the past and one ongoing) in four of the five *G. agassizii* recovery units and inadequate recruitment with decreasing percentages of juveniles in all five recovery units."

This status, in part, prompted the Council to join Defenders of Wildlife and the Desert Tortoise Preserve Committee (DTPC) to petition the California Fish and Game Commission (Commission) in March 2020 to elevate the listing of the Mojave desert tortoise from Threatened to Endangered under the California Endangered Species Act (CESA) (Defenders of Wildlife et al. 2020). Importantly, following California Department of Fish and Wildlife's (CDFW) (2024a) status review, in their April 2024 meeting the California Fish and Game Commission voted unanimously to accept the CDFW's petition evaluation and recommendation to uplist the tortoise from threatened to endangered under the CESA based on the scientific data provided on the species' status, declining trend, numerous threats, and lack of effective recovery implementation and land management (CDFW 2024b). On July 15, 2025, the tortoise was officially uplisted to endangered status under the CESA (Commission 2025).

The International Union for Conservation of Nature's (IUCN) Species Survival Commission, Tortoise and Freshwater Turtle Specialist Group, now considers the Sonoran desert tortoise, located in Arizona and Sonora, Mexico, to be Vulnerable at this time, but nearly qualifies as Endangered (Averill-Murray et al. 2023). "Steep declines of approximately 54% have occurred in recent years in several formally monitored local subpopulations in Arizona." "Despite evidence that several subpopulations have stabilized or increased, survival rates are predicted to decline with future drought conditions, which are expected to intensify with global climate change." In Mexico, "patterns of rainfall and drought across Sonora mirror those in Arizona and suggest that Sonoran subpopulations likely increased and decreased similarly over time." According to the IUCN, this designation of Vulnerable means that the species is "considered to be facing a high rate of extinction in the wild" and is one step below endangered.

The IUCN identified several threats to the survival of the Sonoran desert tortoise including residential, commercial, and industrial development; ranching and farming; roads and railroads; hunting and trapping; recreational activities; wildfires and fire suppression activities; invasive non-native plant species; and drought/temperature extremes from climate change. The proposed action

directly deals with management of roads, railroads, other linear structures, and industrial development and indirectly deals with invasive non-native plant species, wildfires and fire suppression, and drought/temperature extremes from climate change.

Description of the Proposed Action

The Draft Arizona State Freight Plan (Draft Plan) represents “an action plan for creating a robust and reliable freight system for Arizona’s continued economic growth and diversification” “The Draft Plan serves as the guiding document for freight-related decision-making by providing a review of historical conditions, forecasting existing and emerging trends, and outlining the State’s priorities for the future.” “The 2026 Plan charts the course for the next four years and beyond. The planning horizon extends through 2050” (ADOT 2026). ADOT, in collaboration with the Arizona Freight Advisory Committee (FAC), presents this 2026 update to the Plan, prepared in accordance with 49 U.S.C. 70202.

Under Fixing America’s Surface Transportation (FAST) Act statewide freight planning requirements, State Departments of Transportation (DOT) must meet these requirements to utilize National Highway Freight Program Funds from the Federal Highway Administration (FHWA) for freight improvement projects.

In the Draft Plan, ADOT identified the freight system in Arizona – highway freight, rail freight, air freight, pipeline systems, land ports of entry and inland ports, military logistics networks, and freight facilities. Following an analysis of freight forecast needs, ADOT developed goals and objectives for the Draft Plan; identified current needs of the highway, rail, air cargo, pipeline, and border infrastructure freight system; identified candidate projects; and selected 26 projects for National Highway Freight Program funding during the five-year horizon. These include improvements (e.g., adding lanes) to highways.

Comments on ADOT’s Draft Arizona State Freight Plan October 2026

Notification of the Draft Plan

ADOT contacted the Council about the availability of the Draft Plan for public review. We appreciate this notification from ADOT and the opportunity to provide input on the Draft Plan. Our comments below request that ADOT continue to contact the Council about opportunities to participate in plans and proposed projects in Arizona affecting desert tortoises, and expand its public outreach efforts especially to stakeholders of resource issues affected by ADOT planning activities and proposed projects.

Freight Advisory Committee Lacks Representation from the Wildlife Community

Members of the FAC are listed at the beginning of the Draft Plan. While local government entities, state transportation agencies, FHWA, private logistics companies, construction companies, the trucking industry, Union Pacific Railroad, consulting firms, a full-service commercial truck dealership, and a mining company were listed as members of the FAC, we were unable to find a member whose focus and expertise is on environmental issues concerning native wildlife, habitat, and connectivity of wildlife populations. The transport of freight via rail or truck (including pipeline transport) and the expansion of International Ports of Entry (e.g., Lukeville and Sasabe occur adjacent to tortoise habitat and habitat for other wildlife) have numerous direct, indirect,

interconnected, and cumulative adverse effects to the occurrence and persistence of wildlife and the quality, quantity, and connectivity of wildlife habitat. This includes Sonoran and Mojave desert tortoises and their habitats.

ADOT should ensure that the FAC and other advisory committees assisting ADOT in planning transportation-related activities and projects include representatives from the groups whose missions may be adversely affected by planning efforts and proposed projects and therefore are stakeholders. This would include the Council if ADOT or FHWA planning activities and proposed projects may affect desert tortoises.

ADOT Should Implement a Collaborative and Ecosystem Method for Planning and Proposing Projects

FHWA is implementing Planning and Environment Linkages (PEL). “PEL represents a collaborative and integrated approach to transportation decision-making that 1) considers environmental, community, and economic goals *early in the transportation planning process* [emphasis added], and 2) uses the information, analysis, and products developed during planning to inform the environmental review process” (FHWA webpage accessed 2026-10-11 (https://www.environment.fhwa.dot.gov/env_initiatives/PEL.aspx?_gl=1*_lusehmb*_ga*NTQ1MDY5MjA2LjE3OTE3NDEyODM.*_ga_VW1SFWJKBB*_czE3OTE3NDEyODMkbzEkZzEkdE3OTE3NDIzNTEkajYwJGwwJGgw)). The Council requests that ADOT implement PEL early in the transportation planning process in Arizona, which would include the development of the Arizona State Freight Plan.

The Council recommends that ADOT adopt a similar process that incorporates environmental goals and objectives early in the transportation planning process. FHWA should require ADOT to implement this process because funding for most projects identified in the Draft Plan will be from FHWA. For the Mojave desert tortoise, these goals should include:

- effective implementation of and adherence to the purpose of the Federal Endangered Species Act’s (FESA) —“to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species,” and the policy of FESA — “all federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act),” and
- through FHWA, implementation of section 7(a)(1) of FESA — “All other Federal agencies shall . . . utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species.”

For the Sonoran desert tortoise, these goals and objectives should include as a minimum those listed in the Candidate Conservation Agreement for the Sonoran Desert Tortoise (Agreement) (USFWS et al. 2015). As a signatory to this Agreement, ADOT committed to implementing:

- for projects funded by FHWA, analysis of project effects on species listed as Candidates and those protected by candidate conservation agreements under the FESA. This includes implementation of avoidance, minimization and mitigation measures on ADOT projects.
- partner with Arizona Game and Fish Department to implement survey and handling procedures, conservation approaches and research related to Sonoran desert tortoises.

- maintain ADOT right-of-way to minimize invasive plant species and fire risks as authorized.
- partner with state and federal agencies to address invasive plant species in and adjacent to ADOT right-of-way.
- coordinate and partner with state and federal agencies and other interested parties to incorporate project design features to minimize Sonoran desert tortoise habitat fragmentation and vehicle strikes.
- conduct habitat suitability surveys and analyze potential impacts for projects with a scope of work that could impact Sonoran desert tortoise habitat.

Specific conservation measures listed that ADOT would implement include:

- Maintain ADOT ROWs to minimize invasive species and fire risks as funding allows
- Partner with state and federal agencies to address invasive species in and adjacent to ADOT ROWs in Sonoran desert tortoise habitat
- Facilitate development of conservation approaches and research related to increasing road permeability for the Sonoran desert tortoise
- Conduct habitat suitability surveys and analyze potential impacts for projects with a scope of work that could impact Sonoran desert tortoise habitat
- Coordinate and partner with State and Federal agencies and other interested parties to incorporate project design features where warranted to minimize Sonoran desert tortoise habitat fragmentation
- Incorporate project design features where warranted to minimize Sonoran desert tortoise vehicle strikes
- Develop survey and handling procedures for Sonoran desert tortoises for moving them off roads
- Follow the most current protocol for relocating any Sonoran desert tortoise that may be impacted by an ADOT construction or maintenance project
- Provide awareness training and/or information to ADOT and contractor personnel working on construction and maintenance projects in areas with suitable habitat.

For example, identified in the Agreement is “promote proactive planning to avoid or minimize impacts from ADOT activities.” This conservation action is an example of what the Council recommends and what we were unable to find in the Draft Plan.

If the goal of the Agreement is to manage for the Sonoran desert tortoise so that listing under FESA is not needed, ADOT and FHWA would likely need to implement proactive management actions during planning so that appropriate mitigation, including avoidance is implemented. These actions should ensure that after implementation of mitigation, proposed projects do not have residual direct, indirect, interconnected, and cumulative adverse effects to tortoises and their habitats needed for their survival and persistence (e.g., Category 1 and 2 tortoise habitats and connectivity between them).

Unfortunately, the Agreement does not obligate ADOT to look at the entire travel network and its density of routes in the range of the desert tortoises, an important indicator of tortoise survival and persistence (Averill-Murray and Allison 2023). Averill-Murray and Allison’s findings were on route density were not published in the scientific literature until after the Agreement was signed.

This landscape approach to managing the Sonoran desert tortoise for persistence is needed because of its occurrence in small populations follows the patchy distribution of its habitat (USFWS et al. 2015). To assure gene flow between populations, a landscape approach to population and habitat management for the Sonoran desert tortoise is necessary for survival and long-term persistence. Also published after the Agreement is trend data on tortoise abundance from 16 permanent study plots of Sonoran tortoise populations in Arizona. The trend is one of ongoing decline since the late 1980s (Averill-Murray 2023).

In the Draft Plan, ADOT should include a description or summary of the environmental goals and objectives especially with respect to listed, proposed, and candidate species and species for which there is a candidate conservation agreement.

Stewardship

On page 5 of the Draft Plan, ADOT said, “The plan review confirmed alignment on safety and system management across Arizona's planning framework but identified gaps in resilience, collaboration, data-informed decision making, and technology.” “ADOT integrated data-informed and collaborative decision making more explicitly into the Stewardship goal.”

Under the Stewardship Goal (page 96 of the Draft Plan), ADOT identified five stewardship objectives:

- Objective 4.1: Provide transparent access to ADOT planning documents, data resources, and decision-making processes.
- Objective 4.2: Use data resources and performance-based decision making to select fiscally conscientious investments that advance plan goals and objectives.
- Objective 4.3: Reduce the effect of freight on environmental resources by supporting the deployment of advanced vehicle technologies, cleaner fuels, and more efficient freight operations.
- Objective 4.4: Institute performance-based and data-informed policies that increase Arizona’s economic preparedness and competitiveness.
- Objective 4.5: Improve the resiliency of critical at-risk assets on the freight transportation system.

Stewardship is the careful and responsible management of something entrusted to one's care. While ADOT and FHWA are entrusted with effective management of moving freight in Arizona, they are also entrusted with environmental stewardship. Only one of the objectives in the Draft Plan mentions “environmental resources”—“Objective 4.3. Reducing the adverse effects on environmental resources are limited to using advance technologies, cleaner fuels, and more efficient freight operations.” In reading this objective, it appears the focus of reducing the adverse effects on “environmental resources” is limited to air quality impacts. We found one mention of “wildlife” and no mention of “habitat,” “vegetation,” “soils,” “ecosystem” or similar biological resource descriptors—the biological or living components of the resources that comprise the terrestrial environment and that are adversely affected by the transportation infrastructure for transporting freight. This absence of including mitigation for wildlife, habitat, vegetation, soils, and ecosystems in the Draft Plan is a major oversight by ADOT that should be corrected in the final Plan.

Adverse Effects of Air Quality on Tortoises: Because the Draft Plan indicates that reduction in adverse effects to environmental resources would focus on air quality concerns, we provide ADOT with information on the adverse effects of air pollution to tortoises and their habitats. However, air quality concerns are only one of a myriad of potential adverse effects to tortoises and tortoise habitats from implementation of the Draft Plan and implementation of projects and actions that move freight in Arizona.

Nitrogen emissions from vehicles such as trucks hauling freight are deposited in soils either nearby or farther away via the prevailing winds. For example, the western Mojave Desert is affected by air pollution generated in the Los Angeles air basin that moves inland with the predominant westerly winds (Allen et al. 2009). Similar situations likely occur in Arizona from air pollution generated in metropolitan areas such as Phoenix and Tucson. The pollution contains both oxidized and reduced forms of nitrogen (N), which are of concern because they are deposited on soil and plant surfaces and thus fertilize plants (Allen et al. 2009). Gaseous HNO_3 and NH_3 remain active and “in dry environments [such as the Mojave and Sonoran deserts], soil N accumulates on the soil surface over time” (Allen et al. 2009). “If air pollution increases (although emissions may decrease from individual vehicles, ADOT predicts the number of vehicles in use for freight will increase), we expect to observe elevated soil N” (Allen et al. 2009).

The nitrogen deposited from air pollution enriches the ordinarily infertile desert soils (Brooks 2003). The addition of nitrogen to the soil increased the density and biomass of non-native invasive plants, but decreased the density, biomass, and species richness of native plants during the years of highest annual plant productivity (Brooks 2003). Exotic annual grasses are well-suited to nitrogen pulses for growth and reproduction compared with native species. In a study at Joshua Tree National Park, sites with the lowest nitrogen deposition had the highest seed bank species richness (Schneider and Allen 2012). Continued nitrogen exposure is expected to reinforce exotic dominance in the seed bank, thereby reducing native species diversity (DeFalco and Esque 2014).

Non-native invasive annual plants outcompete native plants, and in the Mojave and Colorado deserts do not provide the nutritional or water balance requirements that hatchling, juvenile, and adult Mojave desert tortoises need to survive and grow (Drake et al. 2016). Tortoise reproduction is affected by the availability of adequate nutrition and water. Fecundity or egg production was positively correlated with the production of winter annual forbs (Henen 2002). Henen (2002) reported that some female desert tortoises would forego egg production during dry years because additional water is needed for egg production. If the available forage for tortoises is dominated by non-native invasive grasses (which have low nutrient quality and low water content) and tortoises are unable to find native plants that support their nutritional and water balance needs, then successful reproduction by tortoises would be reduced. Reduced reproduction also means reduced recruitment of tortoises into the adult population to replace the deaths of adult tortoises resulting in a decline in the tortoise population.

Establishment and proliferation of non-native invasive plants also means the increased frequency, size, and duration of wildfires (Moloney et al. 2019). Most wildfires are initiated by human activities. In the Mojave Desert, Brooks and Matchett (2006) reported that most wildfires had originated along major roadways. The result of wildfires is the loss or severe degradation of habitat for tortoises and other wildlife species. Most native seeds in seed banks are destroyed (DeFalco and Esque 2014), mycorrhizal fungi and soil crusts are severely damaged or destroyed (Allen et

al. 2011, Belnap et al. 2001), native perennial and annual vegetation is killed, and the natural replacement time for these components of the ecosystem are decades or longer (Belnap 1993, Abella et al. 2010).

Thus, ongoing nitrogen emissions from freight carriers has cascading adverse effects on tortoises and their habitats that extend beyond adverse effects to air quality. These are adverse effects on Mojave and Sonoran desert tortoises in Arizona that should be mitigated from the plans to increase freight flows and delivery in Arizona. We support efforts that would reduce the quantity of pollutants containing N. However, with reductions, N deposition on desert soils still occurs along with numerous adverse effects to tortoises and tortoise habitats from freight infrastructure and its transport that ADOT and FHWA should mitigate.

We remind ADOT and FHWA that atmospheric N deposition on desert soils is one of several adverse effects to wildlife and their habitat, including Mojave and Sonoran desert tortoises, from the operations, maintenance, and proposed expansion (construction projects) of freight management activities, specifically linear projects (roads, rail lines, pipelines etc.). Other adverse effects include direct mortality of individual animals; spread of habitat-altering invasive plants (e.g., buffelgrass, *Cenchrus ciliaris*) in the tires and undercarriages of vehicles resulting in habitat degradation, habitat fragmentation, and loss of demographic and genetic connectivity of tortoise populations (Edwards et al. 2004); increased fire frequency; increased collection of tortoises (Averill-Murray 2024); and increased resource subsidies of food (e.g., roadkill) and water allow native predator (e.g., coyote, *Canis latrans*) densities to increase beyond normal population levels (Goodrich & Buskirk 1995, cited in Esque et al. 2010) resulting in increased mortality of tortoises (Esque et al. 2010, Cypher et al. 2014, Woodruff et al. 2024).

Even though various management actions address the negative effects of roads on wildlife, most strategies for minimizing or mitigating the effects of roads are focused on the actual roads themselves (e.g., barrier fencing to keep tortoises off of highways) rather than on the collective travel network across landscapes (Averill-Murray 2024). Averill-Murray and Allison (2023) reported that implementing limits on road density is necessary for effectively managing cumulative effects of linear projects. The authors identified densities of all linear features used for travel (e.g., paved and unpaved roads, access roads along pipelines and transmission lines, off-highway vehicle routes, etc.), should be less than 0.6 km/km² as a general target for travel management in areas where tortoise conservation is a priority (e.g., Category 1 and 2 tortoise habitat and connectivity habitat). Lower densities may be necessary in particularly sensitive areas, whereas higher densities may be appropriate in areas less important to landscape-level conservation and wildlife connectivity.

The Draft Plan should identify these interconnected and cumulative adverse effects (not just direct and indirect adverse effects), and incorporate science-based effective mitigation and monitoring in the final Plan to fully offset these adverse effects, with avoidance of adverse effects to tortoises and their habitats as the primary goal.

Stakeholder Engagement

ADOT discusses stakeholder engagement (pages 91-94 of the Draft Plan) in the development of the Draft Plan. ADOT engaged Arizona's freight partners and held two meetings with the FAC (30 stakeholders and 15 ADOT staff).

One definition of a stakeholder is “one who is involved in or affected by a course of action.” The Council considers itself a stakeholder for projects that may adversely affect desert tortoises. Our explanation for this is because our mission is “to assure the perpetual survival of viable populations of desert tortoises represented throughout their historical ranges,” and our participation in commenting on numerous proposed projects in the range of the Mojave and Sonoran desert tortoises in Arizona, California, Nevada, and Utah.

Projects identified in the Draft Plan that are current bottlenecks to freight management include highway system needs, freight rail system needs, and pipeline system needs, and border infrastructure needs. Some projects identified under these headings would likely result in direct, indirect, interconnected, and cumulative adverse effects to Mojave or Sonoran desert tortoise or their habitats.

The Council recommends that ADOT broaden its perspective of issues to be addressed when planning for the movement of freight to include all environmental effects, not just air quality. One step in implementing this recommendation would be to broaden the membership of the FAC to include representation of non-governmental organizations from the wildlife and desert ecosystem community. Implementing this action would help ADOT to be proactive in planning rather than reactive to issues that were missed during planning because the FAC Committee neglected to include relevant issues concerning (1) listed, proposed, and candidate species under FESA, (2) proposed and designated critical habitat, and (3) special status wildlife species and their habitats recognized by other federal agencies because of their declining abundance. In the development of the Draft Plan, ADOT should include these relevant issues. Inclusion early in the planning process is crucial to implementing effective results for the movement of freight and to identify and implement effective solutions to avoid or substantially minimize adverse effects to these species and their habitats.

Compliance with Federal Environmental Laws including NEPA and FESA

ADOT will receive federal funding for the implementation of the projects identified in the Draft Plan. Thus, implementation of any project identified in the Draft Plan requires compliance with federal environmental laws including the National Environmental Policy Act (NEPA), FESA, Fish and Wildlife Coordination Act, Bald and Golden Eagle Protection Act, and others. It should also require compliance with FHWA programs including implementation of Eco-Logical. According to FHWA’s website Eco-Logical “supports collaborative decision-making during the transportation planning and project development process” (https://www.environment.fhwa.dot.gov/Env_initiatives/eco-logical.aspx; webpage accessed 2026-10-11). Eco-Logical uses an “ecosystem approach” “for sustaining or restoring ecological systems and their functions and values.”

In the Draft Plan, Table 36 lists several projects that ADOT intends to implement. We assert that these projects should have been identified using a collaborative decision-making process that incorporated environmental concerns and interests including the needs of listed and special status species and their habitats. According to FHWA, implementing an ecosystem approach to infrastructure projects include safer, improved infrastructure; improved watershed and ecosystem health; increased connectivity and conservation; efficient project development; and increased transparency. Failure to do so puts ADOT and FHWA at risk of violating FHWA policies and not

achieving these benefits. The Council recommends that Eco-logical be implemented fully in ADOT's planning activities including the development of the final Plan.

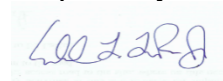
Performance Measurement

In the Draft Plan under Performance Measurement, "ADOT tracks a range of indicators to understand how well the freight system is functioning and where it is falling short. These measures span safety, network reliability, environmental impact, and emerging risks such as cargo theft and extreme weather." ADOT uses 15 strategies to evaluate performance measurement. Two strategies mention the environment – "Evaluate the progress in reducing traffic and wildlife incidents based on the implementation of the Arizona Statewide Wildlife-Vehicle Conflict Study" and "Evaluate and consider formal designation of hazardous materials routes to address freight safety risks and reduce environmental, community, and supply chain impacts." Thus, ADOT's performance measurement does not evaluate most impacts to tortoises from the use of linear features other than potentially direct mortality (we are unsure whether the Arizona Statewide Wildlife-Vehicle Conflict study includes tortoises) and other species of small or medium-size wildlife. Consequently, we conclude that monitoring of impacts to tortoises and their habitats from linear features and ports of entry infrastructures that support the movement of freight in Arizona is not occurring. ADOT should broaden its Performance Measurement to include accomplishing goals and objectives identified in the final Plan in addition to enhancing freight movement. We presume that ADOT's goals and objectives would include avoiding or minimizing adverse effects to the wildlife, wildlife habitats, vegetation, soils, and ecosystems along with other effects to the human environment.

We appreciate this opportunity to provide the above comments and trust they will help protect tortoises and their habitats during any resulting authorized activities. Herein, we reiterate that the Council wants to be identified as an Affected Interest for this and all other proposed actions and projects funded, authorized, or carried out by ADOT that may affect desert tortoises, and that any subsequent environmental documentation for this Plan is provided to us at the contact information listed above. Our reason for this request is so we may comment on them to ensure that ADOT fully considers and implements actions to conserve these tortoises as part of its responsibility under FESA for the Mojave desert tortoise for projects authorized, funded, or carried out by federal agencies, and as part of its commitment to conserve the Sonoran desert tortoise under the Candidate Conservation Agreement.

Please respond in an email that you have received this comment letter so we can be sure our concerns have been registered with the appropriate personnel and office for this Project.

Respectfully,



Edward L. LaRue, Jr., M.S.

Desert Tortoise Council, Ecosystems Advisory Committee, Chairperson

Cc: Heather Whitlaw, Field Supervisor, Arizona Ecological Services Field Office (Phoenix),
U.S. Fish and Wildlife Service, heather_whitlaw@fws.gov

Literature Cited

- Abella, S.R. 2010. Disturbance and plant succession in the Mojave and Sonoran Deserts of the American Southwest. *International Journal of Environmental Research and Public Health* 7.4 (2010): 1248-1284.
<https://www.mdpi.com/1660-4601/7/4/1248>
- [ADOT] Arizona Department of Transportation. 2026. Arizona State Freight Plan October 2026 – Draft.
https://azdot.gov/sites/default/files/2026-09/ADOT-SFP_Draft_20260925-FINAL-508-Compliant92826.pdf
- Allen, E.B., L.E. Rao, R.J. Steers, A. Bytnerowicz, and M.E. Fenn. 2009. Impacts of Atmospheric Nitrogen Deposition on Vegetation and Soils at Joshua Tree National Park. Pages 78-100 *in*: R.H. Webb, L.F. Fenstermaker, J.S. Heaton, D.L. Hughson, E.V. McDonald, and D.M. Miller, eds. *The Mojave Desert: Ecosystem Processes and Sustainability*. University of Nevada Press, Las Vegas.
- Allen, E.B., R.J. Steers, and S.J. Dickens. 2011. Impacts of Fire and Invasive Species on Desert Soil Ecology. *Rangeland Ecology & Management*, 64(5):450-462.
<https://www.sciencedirect.com/science/article/pii/S1550742411500557>
- Averill-Murray, R.C. 2023. Sonoran Desert Tortoise (*Gopherus morafkai*) Trends in Adult Abundance and Precipitation. *The IUCN Red List of Threatened Species*.
- Averill-Murray, R.C., and L.J. Allison. 2023. Travel Management Planning for Wildlife with a Case Study on the Mojave Desert Tortoise. *Journal of Fish and Wildlife Management* 14(1):269–281; e1944-687X.
<https://doi.org/10.3996/JFWM-22-030>
- Averill-Murray, R.C., P.C. Rosen, C.A. Jones, T.R. Jones, R.A. Lara-Resendiz, T. Edwards, A. Karl, & K.H. Berry. 2023. *Gopherus morafkai*. *The IUCN Red List of Threatened Species* 2023: e.T97246109A97246177.
<https://dx.doi.org/10.2305/IUCN.UK.2023-1.RLTS.T97246109A97246177.en>
- Averill-Murray, R.C. 2024. Red List Status of *Gopherus morafkai* and Effects of Roads on Desert Tortoises. *Sonoran Herpetologist* 37 (1) 2024: 19-21.
<https://tucsonherpsociety.org/publications/sonoran-herpetologist/>
- Belnap, J. 1993. Recovery rates of cryptobiotic crusts: inoculant use and assessment methods. *Great Basin Naturalist*: Vol. 53 : No. 1 , Article 10.
<https://scholarsarchive.byu.edu/gbn/vol53/iss1/10>
- Belnap, J., J.H. Kaltenecker, R. Rosentreter, J. Williams, S. Leonard, and D. Eldridge. 2001. *Biological Soil Crusts: Ecology and Management*. Bureau of Land Management National Science and Technology Center, Information and Communications Group, Technical Reference 1730-2, BLM/ID/ST-01/001+1730.

- <https://www.ntc.blm.gov/krc/system/files?file=legacy/uploads/2939/CrustManual.pdf>
- Berry, K.H., L.J. Allison, A.M. McLuckie, M. Vaughn, and R.W. Murphy. 2021. *Gopherus agassizii*. The IUCN Red List of Threatened Species 2021: e.T97246272A3150871. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T97246272A3150871.en>
- Brooks, M.L. 2003. Effects of increased soil nitrogen on the dominance of alien annual plants in the Mojave Desert. *Journal of Applied Ecology* 2003 40:344–353. <https://besjournals.onlinelibrary.wiley.com/doi/pdf/10.1046/j.1365-2664.2003.00789.x>
- Brooks, M.L. and J.R. Matchett. 2006. Spatial and temporal patterns of wildfires in the Mojave Desert, 1980–2004. *Journal of Arid Environments* 67 (2006): 148–164. https://cdn.greensoft.mn/uploads/users/1277/files/Greenmongolia/%D0%93%D0%B0%D0%B4%D0%B0%D0%B0%D0%B4/State%20and%20transition%20model/Brooks_Matchett_Mojave_wildfire_2006.pdf
- [CDFW] California Department of Fish and Wildlife. 2024a. Status Review for Mojave Desert Tortoise (*Gopherus agassizii*) Report to the Fish and Game Commission, February 2024. <https://nrm.dfg.ca.gov/documents/ContextDocs.aspx?cat=CESA-Listing>
- [CDFW] California Department of Fish and Wildlife. 2024b. 2022-2024 News Releases. California Fish and Game Commission Holds Hybrid Meeting, April 23, 2024. <https://wildlife.ca.gov/News/Archive/california-fish-and-game-commission-holds-hybrid-meeting11>
- [Commission] California Fish and Game Commission. 2025. CESA, Petitions to List Species Under the California Endangered Species Act, Finalized Petitions. <https://fgc.ca.gov/CESA#1089124-mojave-aka-agassizs-desert-tortoise-2025>
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=232827&inline>
- Cypher, B.L., T.L. Westall, C. Van Horn Job, and E.C. Kelly. 2014. Coyote Foraging Patterns in the Central Mojave Desert: Implications For Predation on Desert Tortoises. Final Report. California State University, Stanislaus, Endangered Species Recovery Program. Turlock, CA. https://esrp-csustan-edu.carmenjimenezphillips.com/publications/pdf/Cypher_etal_2014_MojaveCoyoteForagingPatterns.pdf
- DeFalco, L.A., and T.D Esque. 2014. Soil Seed Banks: Preserving Native Biodiversity and Repairing Damaged Desert Shrublands. *Fremontia* 42(2):20-23. https://www.researchgate.net/profile/Todd-Esque/publication/263928435_Soil_seed_banks_Preserving_native_biodiversity_and_repairing_damaged_desert_shrublands/links/54824d4c0cf2f5dd63a89972/Soil-seed-banks-Preserving-native-biodiversity-and-repairing-damaged-desert-shrublands.pdf

- Defenders of Wildlife, Desert Tortoise Preserve Committee, and Desert Tortoise Council. 2020. A Petition to the State of California Fish And Game Commission to move the Mojave desert tortoise from listed as threatened to endangered.
https://defenders.org/sites/default/files/2020-03/Desert%20Tortoise%20Petition%203_20_2020%20Final_0.pdf
- Edwards, T., C.R. Schwalbe, D.E. Swann, and C.S. Goldberg. 2004. Implications of anthropogenic landscape change on interpopulation movements of the desert tortoise (*Gopherus agassizii*). *Conservation Genetics* 5:485–499.
<https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=2af6a0e620f9d5cfee51940ce098a0d39e49d305>
- Esque, T.C., K.E. Nussear, K.K. Drake, A.D. Walde, K.H. Berry, R.C. Averill-Murray, A.P. Woodman, W.I. Boarman, P.A. Medica, J. Mack, and J.H. Heaton. 2010a. Effects of subsidized predators, resource variability, and human population density on desert tortoise populations in the Mojave Desert, U.S.A. *Endangered Species Research*, Vol. 12-167-177, 2010, doi: 10.3354/esr00298.
<https://www.int-res.com/articles/esr2010/12/n012p167.pdf>
- Drake, K. K., L. Bowen, K. E. Nussear, T. C. Esque, A. J. Berger, N. A. Custer, S. C. Waters, J. D. Johnson, A. K. Miles, and R. L. Lewison. 2016. Negative impacts of invasive plants on conservation of sensitive desert wildlife. *Ecosphere* 7(10):e01531. 10.1002/ecs2.1531.
<https://esajournals.onlinelibrary.wiley.com/doi/pdf/10.1002/ecs2.1531>
- Henen, B.T. 2002. Energy and water balance, diet, and reproduction of female desert tortoises (*Gopherus agassizii*). *Chelonian Conservation and Biology* 4(2):319–329.
- Moloney, K.A., E.L. Mudrak, A. Fuentes-Ramirez, H. Parag, M. Schat, and C. Holzapfel. 2019. Increased fire risk in Mojave and Sonoran shrublands due to exotic species and extreme rainfall events. *Ecosphere* 10, e02592.
<https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.2592>
- Schneider, H.E., and E.B. Allen. 2012. Effects of elevated nitrogen and exotic plant invasion on soil seed bank composition in Joshua Tree National Park. *Plant Ecology* (2012) 213:1277–1287.
<https://link.springer.com/article/10.1007/s11258-012-0085-6>
- [USFWS et al.] U.S. Fish and Wildlife Service, Bureau of Land Management, Bureau of Reclamation, National Park Service, Department of Defense, Customs and Border Protection, U.S. Forest Service, Natural Resources Conservation Service, Arizona Game and Fish Department, and Arizona Department of Transportation. 2015. Candidate Conservation Agreement for the Sonoran Desert Tortoise (*Gopherus morafkai*) in Arizona. May 27, 2015.
<https://www.blm.gov/sites/blm.gov/files/policies/IMAZ-2016-004-a1.pdf>
- Woodruff, S.P., D.A. Eacker, and L.P. Waits. Estimating Coyote Densities with Local, Discrete Bayesian Capture-Recapture Models. *Journal of Wildlife Management* 85(1):73-86.

<https://wildlife.onlinelibrary.wiley.com/doi/abs/10.1002/jwmg.21967>